

Claims

1. A fluid supply, comprising:
5 a body;
a reversibly fluid absorbing material disposed in said body, said fluid absorbing material having a first surface energy; and
at least one fiber disposed within said reversibly fluid absorbing material, said at least one fiber having a fiber surface energy, wherein said
10 fiber surface energy is less than said first surface energy.
2. The fluid supply in accordance with claim 1, wherein said body is adapted to receive a fluid having a fluid surface energy, and wherein said fluid surface energy is at least 10 millijoules per meter squared less than said
15 first surface energy.
3. The fluid supply in accordance with claim 2, wherein said fluid surface energy is at least 20 millijoules per meter squared less than said first surface energy.
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4. The fluid supply in accordance with claim 1, wherein said body is adapted to receive a fluid having a fluid surface energy, and wherein said fluid surface energy is at least 10 millijoules per meter squared greater than said fiber surface energy.
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5. The fluid supply in accordance with claim 4, wherein said fluid surface energy is at least 20 millijoules per meter squared greater than said fiber surface energy.

6. The fluid supply in accordance with claim 1, wherein said body is adapted to receive a fluid having a fluid surface energy, and wherein said fluid surface energy is at least 15 millijoules per meter squared less than said first surface energy and at least 10 millijoules per meter squared greater than said fiber surface energy.

7. The fluid supply in accordance with claim 1, wherein said reversibly fluid absorbing material further comprises bonded polyester fibers.

8. The fluid supply in accordance with claim 7, wherein said bonded polyester fibers further comprise bonded polyester fibers having a polyolefin core.

9. The fluid supply in accordance with claim 1, wherein said reversibly fluid absorbing material further comprises bonded polymer fibers having a polymer core and a polymeric outer sheath, wherein said polymeric outer sheath is formed from a different material than said polymer core.

10. The fluid supply in accordance with claim 1, wherein said reversibly fluid absorbing material further comprises bonded polyolefin fibers.

11. The fluid supply in accordance with claim 10, wherein said bonded polyolefin fibers further comprise bonded polypropylene fibers.

12. The fluid supply in accordance with claim 1, wherein said reversibly fluid absorbing material further comprises bonded polymer fibers.

13. The fluid supply in accordance with claim 12, wherein said bonded polymer fibers further comprise bonded polymer fibers formed from a polymer blend.

14. The fluid supply in accordance with claim 12, wherein said bonded polymer fibers further comprise, surface modified bonded polymer fibers.

5 15. The fluid supply in accordance with claim 12, wherein said bonded polymer fibers further comprise bonded polymer fibers having a substantial capillary direction.

10 16. The fluid supply in accordance with claim 15, further comprising a fluidic interconnect.

15 17. The fluid supply in accordance with claim 16, wherein said substantial capillary direction is substantially perpendicular to said fluidic interconnect.

 18. The fluid supply in accordance with claim 16, wherein said substantial capillary direction is substantially parallel with said fluidic interconnect.

20 19. The fluid supply in accordance with claim 18, further comprising a pen tip in substantially permanent fluid communication with said reversibly fluid absorbing material.

25 20. The fluid supply in accordance with claim 1, wherein said at least one fiber further comprises at least one threading fiber.

30 21. The fluid supply in accordance with claim 20, wherein said reversibly fluid absorbing material further comprises a first surface and a second surface wherein said at least one threading fiber extends through said fluid absorbing material from said first surface to said second surface.

22. The fluid supply in accordance with claim 21, wherein said at least one threading fiber forms a serpentine structure extending from said first surface to said second surface.

5 23. The fluid supply in accordance with claim 21, wherein said reversibly fluid absorbing material further comprises a third surface and a fourth surface wherein said at least one threading fiber extends through said fluid absorbing material from said third surface to said fourth surface.

10 24. The fluid supply in accordance with claim 21, wherein said first and second surfaces are substantially parallel to each other, wherein said third and fourth surfaces are substantially parallel to each other and mutually orthogonal to said first and said second surfaces.

15 25. The fluid supply in accordance with claim 21, wherein said reversibly fluid absorbing material further comprises a third surface and a fourth surface wherein a second threading fiber extends through said fluid absorbing material from said third surface to said fourth surface.

20 26. The fluid supply in accordance with claim 20, wherein said at least one threading fiber further comprises at least one fluoropolymer threading fiber.

25 27. The fluid supply in accordance with claim 26, wherein said at least one fluoropolymer threading fiber includes a material selected from the group consisting of polytetrafluoroethylene, as fluorinated ethylene propylene copolymers, perfluoroalkoxy polymers, ethylene and tetrafluoroethylene copolymers, polyvinyl fluoride, and mixtures thereof.

28. The fluid supply in accordance with claim 20, wherein said at least one threading fiber includes a material selected from the group consisting of polyethylene, polypropylene, silicones, natural rubber, and mixtures thereof.

29. The fluid supply in accordance with claim 20, wherein said at least one threading fiber further comprises a fluoropolymer coating on said at least one threading fiber.

30. The fluid supply in accordance with claim 20, wherein said at least one threading fiber further comprises at least one threading fiber having a diameter in the range from about 5 micrometers to about 1.0 millimeter.

31. The fluid supply in accordance with claim 1, wherein said at least one fiber further comprises a plurality of short length fibers randomly dispersed within said reversibly fluid absorbing material.

32. The fluid supply in accordance with claim 31, wherein said body has an internal volume defined by three dimensions wherein one of said three dimensions is a smallest dimension, wherein said short length fibers have a length less than said smallest dimension.

33. The fluid supply in accordance with claim 31, wherein said plurality of short length fibers further comprises a plurality of short length fibers having a fiber diameter in the range from about 2 micrometers to about 50 micrometers.

34. The fluid supply in accordance with claim 1, wherein said body has an internal volume defined by three dimensions wherein one of said three dimensions is a smallest dimension less than the other two dimensions, and
5 wherein said at least one fiber further comprises at least one long fiber having a length greater than said smallest dimension.

35. The fluid supply in accordance with claim 34, wherein said at least one long fiber further comprises said at least one long fiber having a
10 dimension in the range from about 5 micrometers to about 1.0 millimeter.

36. The fluid supply in accordance with claim 1, further comprising a fluid ejector head attached to and in fluid communication with said body.

15 37. The fluid supply in accordance with claim 36, wherein said fluid ejector head further comprises a fluid ejector actuator.

38. The fluid supply in accordance with claim 37, wherein said fluid ejector actuator further comprises a thermal resistor.
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39. The fluid supply in accordance with claim 36, wherein said body and said fluid ejector form a fluid ejector cartridge.

40. The fluid supply in accordance with claim 39, wherein said fluid
25 ejector cartridge further comprises a crown having a fill port.

41. The fluid supply in accordance with claim 1, wherein said reversibly fluid absorbing material is at least partially enclosed by a fluid impervious film.
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42. The fluid supply in accordance with claim 1, wherein said reversibly fluid absorbing material is formed from a mixture of fibers having a range of diameters from about 5 micrometers to about 50 micrometers.

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43. A fluid dispensing system comprising:

at least one fluid supply of claim 1;

at least one fluid ejector head in fluid communication with said at least one fluid supply;

10 a fluid controller electrically coupled to said at least one fluid ejector head; and

a fluid receiving structure controller electrically coupled to a fluid receiving structure and said fluid controller wherein said fluid controller and said fluid receiving structure controller dispense fluid from said at least one
15 fluid supply onto or into said fluid receiving structure.

44. The fluid dispensing system in accordance with claim 43, further comprising a manifold having at least one fluid distribution channel, wherein said at least one fluid distribution channel is in fluid communication with said
20 at least one fluid supply and with said at least one fluid ejector.

45. The fluid dispensing system in accordance with claim 44, wherein said manifold further comprises at least one tower fluidically coupled to said at least one fluid distribution channel, said at least one tower
25 configured to engage a fluid interconnect port disposed on said body of said at least one fluid supply.

46. The fluid dispensing system in accordance with claim 44, wherein said tower further comprises a mesh filter disposed on an apex of
30 said tower, wherein said mesh filter is configured to physically contact said reversibly fluid absorbing material.

47. The fluid dispensing system in accordance with claim 43, further comprising a transport mechanism coupled to said fluid receiving structure, wherein said fluid receiving structure and said at least one fluid ejector head move relative to the other.

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48. The fluid dispensing system in accordance with claim 43, wherein said fluid receiving structure is a cellulose based or polymeric based material.

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49. A method for supplying fluid, comprising:
adding fluid to a fluid reservoir, said reservoir having:

a capillary material disposed in said reservoir, said capillary material having a first surface energy, and

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at least one fiber disposed within said capillary material, said at least one fiber having a fiber surface energy, wherein said fiber surface energy is less than said first surface energy.

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50. A replaceable container for a consumable liquid, comprising:
a fluid reservoir having a substantially rigid outer container having an interior volume;

a fluid absorbing material substantially filling said interior volume, said fluid absorbing material having a first surface energy; and

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one or more fibers having a second surface energy and disposed within said fluid absorbing material, wherein said first surface energy is greater than said second surface energy.

51. A fluid supply, comprising:
- means for holding a fluid;
 - means for reversibly absorbing said fluid disposed in said means for
- 5 holding said fluid, said means for reversibly absorbing said fluid having:
- a capillary material having a first surface energy, and
 - at least one fiber having a fiber surface energy, wherein said
- fiber surface energy is less than said first surface energy.